CLAIMS

1. An optical pickup apparatus for recording and/or reproducing main information by irradiating with light a recording medium formed of a plurality of recording layers, the optical pickup apparatus comprising:

a light source;

light collecting means for collecting emitted light emitted from the light source onto one recording layer of the recording medium, the light collecting means being provided so as to be displaceable in a variable direction perpendicular to an optical axis of the emitted light within a movable range including a neutral position centering on the optical axis of the emitted light led to the light collecting means, and by the displacement in the movable direction, changing a light collection position in the recording medium of the emitted light;

light receiving means for receiving reflected light reflected by the recording medium, the light receiving means having first and second light receiving portions for obtaining track position information which is information of the light collection position of the emitted light with respect to a direction parallel to the recording layer, and shift information of the light collecting means from the neutral position, and a third light receiving portion for obtaining focus position information which is

information of the light collection position of the emitted light with respect to a direction perpendicular to the recording layer;

splitting means having a first splitting portion, a second splitting portion, and a third splitting portion, for leading the reflected light via the light collecting means and splitting the reflected light on the respective first to third splitting portions, the first splitting portion leading the reflected light to the first light receiving portion, the second splitting portion leading the reflected light to the second light receiving portion, the third splitting portion leading the reflected light to the third light receiving portion, the first and second splitting portions being disposed in a residual region excluding an axial vicinity portion in a vicinity of a splitting axial line corresponding to an optical axis of the reflected light led to the splitting means when the light collecting means is located at the neutral position; and

control means for obtaining the track position information and shift information by a result of light reception by the light receiving means and, controlling the light collection position of the emitted light in the recording medium by controlling a position of the light collecting means based on the track position information

and shift information.

2. The optical pickup apparatus of claim 1, wherein in the splitting means, the axial vicinity portion is formed in a region including a mobilization regional portion at the time that a radiation range of the reflected light reflected by the other recording layers is displaced along with the displacement of the light collecting means, in a case where the radiation range of the reflected light reflected by the other recording layers except for the one recording layer is smaller than a radiation range of the reflected light reflected by the one recording layer.

3. The optical pickup apparatus of claim 1 or 2, wherein in a case where the light collection position of the emitted light is located on the one recording layer, the reflected light reflected by the other recording layers is irradiated onto the splitting means in the radiation range which is smaller than that of the reflected light reflected by the one recording layer.

4. The optical pickup apparatus of any one of claims 1 to 3, wherein the light source emits light whose central wavelength is within a wavelength range of 650 nanometer or more and 660 nanometer or less.

5. The optical pickup apparatus of any one of claims 1 to 4, further comprising diffracting means interposed between the light source and the light collecting means, for partly diffracting the emitted light, and forming a main beam for obtaining the main information recorded on the recording medium, and a sub beam for obtaining the position information for controlling the light collection position of the main beam.

6. The optical pickup apparatus of any one of claims 1 to 5, wherein the control means obtains the focus position information in accordance with a knife-edge method based on the result of the light reception by the third light receiving portion, and controls the position of the light collecting means based on the focus position information, and thereby the light collection position of the emitted light in the recording medium is controlled.

7. The optical pickup apparatus of any one of claims 1 to 6, wherein the control means obtains the track position information in accordance with a phase contrast method based on the result of the light reception by the first light receiving portion and the result of the light reception by the second light receiving portion, and

controls the position of the light collecting means, and thereby the light collection position of the emitted light in the recording medium is controlled.

8. The optical pickup apparatus of any one of claims 1 to 6, wherein the control means obtains the track position information in accordance with a differential push pull method based on the result of the light reception by the first light receiving portion and the result of the light reception by the second light receiving portion, and controls the position of the light collecting means, and thereby the light collection position of the emitted light in the recording medium is controlled.

9. The optical pickup apparatus of any one of claims 1 to 8, wherein the axial vicinity portion is a circular portion having a splitting axial line as a center.

10. A light emitter for an optical pickup apparatus which records or reproduces main information by irradiating a recording medium formed of a plurality of recording layers with light which is emitted from the light emitter and collected by light collecting means, and receiving by the light emitter the light reflected by the recording medium, the light collecting means collecting

emitted light emitted from the light emitter onto one recording layer of the recording medium, and being provided so as to be displaceable in a variable direction perpendicular to an optical axis of the emitted light within a movable range including a neutral position which centers on the optical axis of the emitted light and by the displacement in the variable direction, whereby a light collection position of the emitted light in the recording medium is changed, the light emitter comprising:

a light source;

light receiving means for receiving reflected light reflected by the recording medium, the light receiving means having a first light receiving portion and a second light receiving portion for obtaining track position information which is information of the light collection position of the emitted light with respect to a direction parallel to a recording layer, and a third light receiving portion for obtaining focus position information which is information of the light collection position of the emitted light with respect to a direction perpendicular to the recording layer; and

splitting means having a first splitting portion, a second splitting portion, and a third splitting portion, the splitting means leading the reflected light via the light collecting means and splitting the reflected light

on the respective first to third splitting portions, the first splitting portion leading the light to a first light receiving portion, the second splitting portion leading the light to a second light receiving portion, the third splitting portion leading the light to a third light receiving portion, the first and second splitting portions being disposed in a residual region excluding an axial vicinity portion in a vicinity of a splitting axial line corresponding to an optical axis of the reflected light led to the splitting means when the light collecting means is located at the neutral position.

11. The light emitter of claim 10, wherein in the splitting means, the axial vicinity portion is formed in a region including a mobilization regional portion at the time that a radiation range of the reflected light reflected by the other recording layers is displaced along with the displacement of the light collecting means, in a case where the radiation range of the reflected light reflected by the other recording layers except for the one recording layer is smaller than that of the radiation range of the reflected light reflected by the one recording layer.

12. The light emitter of claim 10 or 11, wherein in a

case where the light collection position of the emitted light is located on the one recording layer, the reflected light reflected by the other recording layers is irradiated onto the splitting means in the radiation range which is smaller than that of the reflected light reflected by the one recording layer.

13. The light emitter of any one of claims 10 to 12, wherein the light source emits light whose central wavelength is within a wavelength range of 650 nanometer or more and 660 nanometer or less.

14. The light emitter of any one of claims 10 to 13, further comprising diffracting means interposed between the light source and the light collecting means, for partly diffracting the emitted light, and forming a main beam for obtaining the main information recorded on the recording medium, and a sub beam for obtaining the position information for controlling the light collection position of the main beam.

15. The light emitter of any one of claims 10 to 14, wherein the light emitter is provided on an optical pickup apparatus for obtaining the focus position information in accordance with a knife-edge method based on a light

receiving result in a plurality of light receiving elements of the third light receiving portion.

16. The light emitter of any one of claims 10 to 15, wherein the light emitter is provided on an optical pickup apparatus for obtaining the track position information in accordance with a phase contrast method based on the result of the light reception by the first light receiving portion and the result of the light reception by the second light receiving portion.

17. The light emitter of any one of claims 10 to 15, wherein the light emitter is provided on an optical pickup apparatus for obtaining the track position information in accordance with a differential push pull method based on the result of the light reception by the first light receiving portion and the result of the light reception by the second light receiving portion.

18. The light emitter of any one of claims 10 to 17, wherein the axial vicinity portion is a circular portion having a splitting axial line as a center.

19. The light emitter of any one of claims 10 to 18, wherein the light emitter has a polarizing property of

transmitting the emitted light from the light source and the reflected light from the recording medium without splitting the lights by the splitting means, and splitting the lights by the splitting means based on polarizing directions thereof.

20. The light emitter of any one of claims 10 to 18, wherein the light emitter further comprises light guiding means interposed between the light source and the light collecting means, the light guiding means leading the emitted light emitted from the light source to the light collecting means without splitting the emitted light, and leading the reflected light reflected by the recording medium to the splitting means.

21. The light emitter of claim 19 or 20, further comprising polarizing direction changing means interposed between the splitting means and the light receiving means, for changing a polarizing direction of the reflected light from the recording medium to a direction which is different from a polarizing direction of the emitted light from the light source.

22. A splitter provided on an optical pickup apparatus, the optical pickup apparatus recording and reproducing

main information by making light collecting means collect light from a light source, and irradiating with the light a recording medium on which a plurality of recording layers is formed, and then receiving by receiving means light reflected by the recording medium, the light collecting means collecting an emitted light emitted from the light source onto one recording layer, and being provided so as to be displaceable in a variable direction perpendicular to an optical axis of the emitted light within a movable range including a neutral position which range is coaxial with the optical axis of the emitted light and by this displacement to the variable direction, changing a light collection position of the emitted light in the recording medium, the splitter comprising:

splitting means having a first splitting portion, a second splitting portion, and a third splitting portion, the splitter leading the reflected light reflected by the recording medium via the light collecting means and splitting the reflected light on the respective first to third splitting portions, the first splitting portion leading the light to a first light receiving portion, the second splitting portion leading the light to a second light receiving portion, the third splitting portion leading the light to a third light receiving portion, the first and second splitting portions being disposed in a

residual region excluding an axial vicinity portion in a vicinity of a splitting axial line corresponding to an optical axis of the reflected light led to the splitting means when the light collecting means is located at the neutral position.